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EXAMINER	
KAU, STEVEN Y	
ART UNIT	**PAPER NUMBER**
2625	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/633,656	BOESTEN, HUBERTUS MARIE JOZEPH MATHIEU	
	Examiner	Art Unit	
	Steven Kau	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _20 August 2007_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-19_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-19_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _05 August 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. This action is responsive to the following communication: an Amendment filed on August 20, 2007.

- Claims 1, 14 and 18 have been amended.
- Claims 1-19 are currently pending.
- Applicant's arguments filed on August 20, 2007 have been fully considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2, 4-16 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dalal et al (Dalal) (US 5,892,891) in view of Morag et al (Morag) (US 5,343,311) and further in view of Ishimoto (US 2003/0226473).

Regarding **claim 1**, Dalal discloses a system for printing color images, in that he teaches a method of rendering colours in a printing system (a xerographic engine of Fig. 4) using a set of N colorants (e.g. RGB, CMYK or MYKO, etc. col 5, lines 1-3 and col 6,

lines 1-14, and six- or seven-color system, col 7, line 63), including, for each colour to be rendered (e.g. one halftone screen for each colorant, col 7, lines 25), a selection of a subset of M colorants whereby M < N (It is obvious that CMY <CMYK and CMYK < CMYKO, col 7, lines 18-35, and/or a four-color set is < a six-or seven colors in a six-or seven-color system, col 7, line 63) and for each colorant of said subset, a selection of a halftone screen among a plurality of available halftone screens (col 7, lines 21-25), the method comprising steps: said lists (e.g. combinations of colorants comprising at least a first colorant, second colorant, and third colorant are defined as a main gamut, col 3, lines 47-50) being consistent with respect to the attribution (e.g. screen angle, col 8, lines 4) of a halftone screen to a colorant within a subset over said portion of the colour space (Dalal discloses that different four-color sets of halftone screens would be used, each set using the same screen angles for complementary colors, col 8, lines 1-9).

Dalal differs from claim 1, in that he does not teach coverage fractions and defining discrete colour points in at least a portion of a colour space; determining for the defined discrete colour points, different subsets of colorants and associated coverage fractions thereof, rendering each of said colour points, and calculating for each of said subsets an associated graininess value; determining lists of colorant subsets rendering the defined discrete colour points; and selecting one of said lists of subsets of colorants on the basis of a total graininess calculated for said lists .

Morag discloses coverage fractions (cover the color range of 0 through 3.99999, col 9, lines 35-66) and defining discrete colour points (or color values – see Abstract) in at least a portion of a colour space (Figs 3 and 4, col 8, lines 58 through col 9, line 31);

determining for the defined discrete colour points (Morag discloses that color value (color point) is determined for each pixel in the image – see Abstract. An RGB scheme to use 8 bits for each of the three colors red, green and blue for each pixel, Fig. 1b, col 2, lines 29-39, and the six high order bits (six most significant bits) of each of the L*, a*, and b* values for any given point can be used to determine which color cube a particular color point belongs to; col 10, lines 18-46), different subsets of colorants (different subset of colorants of Fig. 4) and associated coverage fractions thereof (Morag discussed color points 0 through 3 cover the color range of 0 through 3.99999, col 9, lines 35-66), rendering each of said colour points (col 7, lines 64 through col 8, line 5), and determining lists of colorant subsets rendering the defined discrete colour points (Morag discloses a RGB scheme (8-bits, see Fig. 1b) and an index scheme for mapping color points (each representing colorant value). Morag uses indexing method (Figs. 5 & 6) to determine lists of colorant subsets rendering (displaying) the defined color points. See col 14, lines 44-66 and Abstract), and selecting one of said lists of subsets of colorants (Figs. 5 & 6, col 14, lines 44-66).

Ishimoto discloses calculating for each of said subsets an associated graininess value (Ishimoto discloses evaluation of graininess, Para. 0105 through 0121).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Dalal to include defining discrete colour points in at least a portion of a colour space; determining for the defined discrete colour points, different subsets of colorants and associated coverage fractions thereof, rendering each of said colour points, determining lists of colorant subsets rendering the defined discrete

colour points, and selecting one of said lists of subsets of colorants taught by Morag to improve processing speed and reduce storage size of the color information of an image. (As a matter of fact that due to large number of pixels in an image and the large amount of color information per pixel, the number of calculations needed to be made can become quite large. The large number of these calculations necessary to make changes to the color information of an image can thus considerably slow down the speed of a computer system, and of course it requires large size of storage) (col 1, lines 9-12 and col 2, lines 49-60).

And then to have modified Dalal to include calculating for each of said subsets an associated graininess value taught by Ishimoto to obtain higher image quality by calculating graininess to ensure ink composition within certain range (Para. 0035). For instance, the ratio of the pigment concentration in the black ink composition to the pigment concentration in the light black ink composition is in a range of 2 to 4.5 (Para. 0014), and the ratio of the pigment concentration in the cyan ink composition to the pigment concentration in the light cyan ink composition to be in a range of 2 to 5 (Para. 0020).

Regarding **claim 2**, Dalal discloses wherein a list of colorant subsets is consistent with respect to the attribution of a halftone screen to a colorant within a subset over said portion of the colour space (See Claim 1 discussion) if a halftone screen associated to a colorant in a subset rendering (Dalal discloses that colors in the main gamut will be printed with a CMYK set of screens, while colors in the extended gamut 102 will be printed with the MYKO set of screens: in either cases, only four

halftone screens need to be accommodated in a pattern on the printing surface. That is, each halftone screen is used for each colorant in either main or extended gamut – col 7, lines 19-35).

Dalal differs from claim 2, in that he does not disclose that a first colour point is associated to the same said colorant, if present, in a subset rendering a neighboring colour point of said first colour point.

Morag discloses that a first colour point (color value) is associated to the same said colorant (a monochrome of MYCK, in color separation, see col 17, lines 48-55), if present, in a subset rendering a neighboring colour point of said first colour point (col 30, lines 1-6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Dalal to include a first colour point is associated to the same said colorant, if present, in a subset rendering a neighboring colour point of said first colour point taught by Morag to improve processing speed and reduce storage size of the color information of an image. (As a matter of fact that due to large number of pixels in an image and the large amount of color information per pixel, the number of calculations needed to be made can become quite large. The large number of these calculations necessary to make changes to the color information of an image can thus considerably slow down the speed of a computer system, and of course it requires large size of storage) (col 1, lines 9-12 and col 2, lines 49-60).

Regarding **claim 4**, Dalal differs from claim 4, in that he does not teach wherein the calculated total graininess for a list is a combination of the graininess calculated for each discrete colour point of the considered portion of the colour space.

Ishimoto teaches wherein the calculated total graininess for a list is a combination of the graininess calculated for each discrete colour point of the considered portion of the colour space (Para. 105 through Para. 121).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Dalal to include the calculated total graininess for a list is a combination of the graininess calculated for each discrete colour point of the considered portion of the colour space taught by Ishimoto to obtain higher image quality by calculating graininess to ensure ink composition within certain range (Para. 0035).

Regarding **claim 5**, Dalal differs from claim 5, in that he does not teach wherein the calculated graininess for each discrete colour point of the considered portion of the colour space is a combination of the partial graininess of each colorant in the subset of colorants rendering said discrete colour point.

Morag teaches that each discrete colour point of the considered portion of the colour space is a combination of each colorant in the subset of colorants rendering said discrete colour point (Figs 3 & 4).

Ishimoto teaches wherein the calculated graininess (Para. 105 through Para. 121).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Morag to include the calculated graininess taught

by Ishimoto to ensure ink composition within certain range (Para. 0035). For instance, the ratio of the pigment concentration in the black ink composition to the pigment concentration in the light black ink composition is in a range of 2 to 4.5 (Para. 0014), and the ratio of the pigment concentration in the cyan ink composition to the pigment concentration in the light cyan ink composition to be in a range of 2 to 5 (Para. 0020).

And then to have modified Dalal to include each discrete colour point of the considered portion of the colour space is a combination of each colorant in the subset of colorants rendering said discrete colour point taught by Morag to improve processing speed and reduce storage size of the color information of an image. (As a matter of fact that due to large number of pixels in an image and the large amount of color information per pixel, the number of calculations needed to be made can become quite large. The large number of these calculations necessary to make changes to the color information of an image can thus considerably slow down the speed of a computer system, and of course it requires large size of storage) (col 1, lines 9-12 and col 2, lines 49-60).

Regarding **claim 6**, Dalal differs from claim 6, in that he does not teach wherein the selected list is the list showing the minimum calculated graininess.

Ishimoto teaches wherein the selected list is the list showing the minimum calculated graininess (Ishimoto discloses that the ratio of the pigment concentration in the black ink composition to the pigment concentration in the light black ink composition is in a range of 2 to 4.5 (Para. 0014), and the ratio of the pigment concentration in the cyan ink composition to the pigment concentration in the light cyan ink composition to

be in a range of 2 to 5 (Para. 0020). Therefore, the minimum calculated graininess is at the lower end of the range (2), Para. 103, or at graininess index of 0.7, Para 116).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Dalal to include the selected list is the list showing the minimum calculated graininess taught by Ishimoto to obtain higher image quality by calculating graininess to ensure ink composition within certain range (Para. 0035).

Regarding **claim 7**, the structure elements of method claim 6 perform all steps of method claim 7. Thus claim 7 is rejected under 103(a) for the same reason discussed in the rejection of claim 6.

Regarding **claim 8**, the structure elements of method claim 6 perform all steps of method claim 8. Thus claim 8 is rejected under 103(a) for the same reason discussed in the rejection of claim 6.

Regarding **claim 9**, Dalal differs from claim 9, in that he does not teach wherein the calculated graininess for a list of colorant subsets rendering the defined discrete colour points is obtained by a mathematical model in which the partial graininess for a colorant in a subset rendering a colour point is a function of the coverage fraction of said colorant.

Morag teaches that a list of colorant subsets rendering the defined discrete colour points is obtained by a mathematical model (Fig. 3) and a colorant in a subset rendering a colour point is a function of the coverage fraction of said colorant (col 9, lines 35-66).

Ishimoto teaches calculating graininess for a list of colorant (Para. 105 through Para 121).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Morag to include the calculated graininess for a list of colorant taught by Ishimoto to ensure ink composition within certain range (Para. 0035). For instance, the ratio of the pigment concentration in the black ink composition to the pigment concentration in the light black ink composition is in a range of 2 to 4.5 (Para. 0014), and the ratio of the pigment concentration in the cyan ink composition to the pigment concentration in the light cyan ink composition to be in a range of 2 to 5 (Para. 0020).

And then to have modified Dalal to include a list of colorant subsets rendering the defined discrete colour points is obtained by a mathematical model and a colorant in a subset rendering a colour point is a function of the coverage fraction of said colorant taught by Morag to improve processing speed and reduce storage size of the color information of an image. (As a matter of fact that due to large number of pixels in an image and the large amount of color information per pixel, the number of calculations needed to be made can become quite large. The large number of these calculations necessary to make changes to the color information of an image can thus considerably slow down the speed of a computer system, and of course it requires large size of storage) (col 1, lines 9-12 and col 2, lines 49-60).

Regarding **claim 10**, the structure elements of method claim 9 perform all steps of method claim 10. Thus claim 10 is rejected under 103(a) for the same reason discussed in the rejection of claim 9.

Regarding **claim 11**, the structure elements of method claim 9 perform all steps of method claim 11. Thus claim 11 is rejected under 103(a) for the same reason discussed in the rejection of claim 9.

Regarding **claim 12**, the structure elements of method claim 9 perform all steps of method claim 12. Thus claim 12 is rejected under 103(a) for the same reason discussed in the rejection of claim 9.

Regarding **claim 13**, the structure elements of method claims 6 and 9 perform all steps of method claim 13. Thus claim 13 is rejected under 103(a) for the same reason discussed in the rejection of claims 6 and 9.

Regarding **claim 14**, recites identical features, as claim 1, except claim 14 is a system claim. Thus, arguments similar to that presented above for claim 1 are also equally applicable to claim 14.

Regarding **claim 15**, Dalal teaches halftone screen (col 7, lines 19-35).

Dalal differs from claim 15, in that he does not teach a memory unit wherein a list of subsets of colorants rendering the colour points, coverage fraction of the said colorants are stored in a look-up table.

Morag discloses Dalal differs from claim 15, in that he does not teach a memory unit (Fig. 10) wherein a list of subsets of colorants rendering the colour points (Figs. 3

and 4) coverage fraction (col 9, lines 34-66) of the said colorants are stored in a look-up table (col 5, lines 29-42).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Dalal to include a memory unit wherein a list of subsets of colorants rendering the colour points, coverage fraction of the said colorants are stored in a look-up table taught by Morag to improve processing speed and reduce storage size of the color information of an image. (As a matter of fact that due to large number of pixels in an image and the large amount of color information per pixel, the number of calculations needed to be made can become quite large. The large number of these calculations necessary to make changes to the color information of an image can thus considerably slow down the speed of a computer system, and of course it requires large size of storage) (col 1, lines 9-12 and col 2, lines 49-60).

Regarding **claim 16**, recites identical features as claim 2, except claim 16 is a system claim. Thus, arguments similar to that presented above for claim 2 are also equally applicable to claim 16.

Regarding **claim 18**, recites identical features as claim 1, except claim 18 is a computer program product claim. Thus, arguments similar to that presented above for claim 1 are also equally applicable to claim 18.

Regarding **claim 19**, recites identical features as claim 4, except claim 19 is a computer program product claim. Thus, arguments similar to that presented above for claim 4 are also equally applicable to claim 19.

4. Claims 3 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dalal et al (Dalal) (US 5,892,891) in view of Morag et al (Morag) (US 5,343,311) and further in view of Ishimoto (US 2003/0226473) as applied to claims 1 and 18, and further in view of Ebner (US 5,689,344).

Regarding **claim 3**, Dalal discloses wherein a list (main gamut) of colorant subsets is consistent with respect to the attribution (e.g. screen angle) of a halftone screen to a colorant within a subset over said portion of the colour space (see Claim 1 discussion) if a halftone screen associated to a colorant in a subset rendering a first colour point is associated to the same said colorant, if present, in a subset rendering a neighboring colour point of said first colour point, and if (see Claim 2 discussion), in the case that a same halftone screen is associated to a first colorant in a subset rendering a colour point (Dalal discloses a main gamut as a subset of color points and halftone screen associates with each colorant, see discussion in Claim 2).

Dalal differs from claim 3, in that he does not teach that a different second colorant rendering a neighbouring colour point of first said colour point, the coverage fractions of the first and second colorants are each less than a threshold coverage fraction.

Morag teaches that a different second colorant rendering a neighbouring colour point of first said colour point (Fig. 4, and col 30, lines 1-6), the coverage fractions (col 9, lines 35-66) of the first and second colorants (col 9, lines 35-66).

Ebner discloses a threshold (e.g. the halftoning system using a desired screen matrix have N number of threshold and N number of threshold values in a K x L matrix,

each threshold corresponding to a printer signal in an image to be printed, the method comprising the steps of determining a percentage of coverage reduction required to mitigate tenting deletions, col 3, lines 10-27).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Dalal to include a different second colorant rendering a neighbouring colour point of first said colour point, the coverage fractions of the first and second colorants are each less than a threshold coverage fraction taught by Morag to improve processing speed and reduce storage size of the color information of an image. (As a matter of fact that due to large number of pixels in an image and the large amount of color information per pixel, the number of calculations needed to be made can become quite large. The large number of these calculations necessary to make changes to the color information of an image can thus considerably slow down the speed of a computer system, and of course it requires large size of storage) (col 1, lines 9-12 and col 2, lines 49-60).

And then to have modified Dalal to include a threshold taught by Ebner to prevent printing of corresponding image signals, the percentage related to the coverage reduction percentage; printing a image signals for each threshold value which is exceeded in the screen matrix (col 3, lines 24-27).

Conclusion

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Kau whose telephone number is 571-270-1120 and fax number is 571-270-2120. The examiner can normally be reached on Monday to Friday, from 8:30 am -5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on 571-272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Kau
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October 30, 2007

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